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E-learning Experience using Open Source Software: Moodle

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ABSTRACT

The present paper highlights the efforts made by the Department of Library and Information Science, University of Pune to use an open source software, viz., Moodle for the promotion of e-learning in the department. Various utilities of the Moodle such as development of the course, blogs, wiki, question banks, notification to the students, etc., has been used. This article narrates the experience of designing, development and implementation of e-learning course for the 'Information Technology' paper of the MLISc curriculum.

Keywords: E-learning, technology-based learning, Moodle, blogs, wiki

1. INTRODUCTION

Various methods are in existence for imparting education such as, lectures, lectures with discussion, panels of experts, brainstorming, videotapes, class discussion, small group discussion, case studies, role playing, report back sessions, worksheets/surveys, index card exercise, guest speakers, value clarification Exercise, etc. Apart from this list, Jaiswal[1] has identified various teaching methods adopted for imparting LIS education particularly in the LIS schools in India, Lectures, on the job training, discussions, project, assignments, question-answer, tutorials, class-notes, symposium, mock interview, group activity. In addition to the above mentioned methods, e-learning is also evolving as one method for imparting education and within a short span has gained popularity.

2. E-LEARNING

Terms that are commonly used to denote e-learning are 'online learning', 'internet learning', 'distributed learning', 'networked learning', 'tele-learning', 'virtual learning', 'computer-assisted learning', 'web-based learning', and 'distance learning'[2]. E-learning is another way of teaching and learning. Different terminologies have been used for e-learning, due to which it is difficult to develop a generic definition.

Robert & Piper[3] define e-learning as 'those that leverage various internet and web technologies to create, enable, deliver, and/or facilitate lifelong learning'.

E-learning has a wide variety of definition, but ultimately it is used to describe the fields of online learning, web-based training, and technology-delivered instruction. E-learning could be interpreted as electronic learning; the learning that involves the internet; learning from a distance via the aid of the internet and, or other electronic gadgets[4]. More specifically e-learning is supposed to increase the rate of learning for the student around 20 to 50[5].

There are many commercial as well as open source software available in the market which can be used for developing e-learning contents such as Joomla LMS, Studio'09, Saba, Desire2learn, Moodle, sakai webstudy, learning LMS and many more. Among these moodle is widely used because of its features and characteristics supporting e-learning. Moodle stands as one of the most popular open source learning management system.

3. OBJECTIVES

Following objectives were framed for the study:

(a) To develop a course in library and information science using open source software

(b) To implement the course to the MLIS students of the Department

(c) To analyse the feedback of the students about the features of the software and about the e-learning process implemented in the Department

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4. METHODOLOGY

This is a product development research. The product i.e., a Moodle (Modular Object-oriented Dynamic Learning Environment)-based e-learning module is the outcome of this research. For developing this product, Moodle, a open source software was downloaded and installed with necessary modifications. In the next step, course content for the 'Information Technology' paper of the MLISc 2nd year students was designed. Students were given orientation for the use of the new designed e-learning module. After the initial orientation students started using the module, beginning with enrollment, assignment, blogs, wikis, and question bank. Feedbacks were obtained from time to time and changes were made to produce the present product.

5. LITERATURE REVIEW

According to the Moodle website[6], it has a large and diverse user community with over 11,31,546 registered users on Moodle site alone, speaking over 78 languages in 218 countries. Many studies have been conducted highlighting use of moodle for imparting education.

As a courseware package and learning system, Moodle has great potential for supporting conventional classroom instruction[7]**.** It not only supports text-based instruction but can also integrates wide range of resources such as html-formatted documents, graphics, audio, video, multimedia, flash-based application, etc.[8]**,** because of the facilities provided, it has great potential for supporting classroom instruction[7] Moodle course platform allows: Activities' monitoring, upgrade to the latest technical concepts and specialisation without expense or business agreement, discussion groups for the teachers' categories and to adjust homework to the levels of the students[9]

Al-Ajlan & Zedan[10] made a comparative study of Moodle and other virtual learning environment systems, based on the features, capabilities and technical aspects and came to the conclusion that Moodle is one of the best virtual learning environment system. Moodle is used for imparting education in many of the reputed institutions of the world such as City university, London[11], Library of the University of Padua, Italy has developed English course for in-service librarians[12]**,** and Informatics Engineering Department of University of Coimbra has developed a module for the Moodle open source e-learning platform through which undergraduate students can 'Build', 'Answer' and 'Evaluate' by blind peer review questions related to a course subject[13]. University of Malaga, Malaga, Spain uses Moodle module for teaching practicals of basic computer organisation course[14].

Machado & Tao[15] compared the user experience between the leading proprietary solution, Blackboard, and the leading open source solution, Moodle and found that Moodle learning management system is the more efficacious and effective than the Blackboard learning management system. Sanchez & Hueros[16] surveyed 226 students of the Business Administration and Management (LADE) and Infant and Primary School Teaching degree courses of the University of Huelva and found that Moodle usage was also directly influenced by perceived ease of use and attitude. Whereas Sumak[17] revealed that the actual use of Moodle depends on two main factors: Behavioural intentions and attitudes toward using Moodle.

Escobar-Rodriguez & Monge-Lozano[18] analysed students' intention to use Moodle platforms to improve the teaching-learning process. Undergraduate students of Physics of Universidad Politécnica de Madrid feel that Moodle has helped them to reinforce their abilities and knowledge[19].

Welzer[20] presented the analysis of a questionnaire and experiences gained through use of Moodle which investigate habits and usage of communication features, students' willingness to participate in feedbacks, more particularly when they assess teachers, their general opinions on e-learning and their experiences with technical issues of Moodle. Paragina[21], *et al.* came to the conclusion that the activity of managing a Moodle course is very complex and delicate both at the educational and at the computer programming level.

6. DEPARTMENT OF LIS, UNIVERSITY OF PUNE

The Department of Library and Information Science of University of Pune, Pune is one of the oldest and richest department in western India. The department was started in 1958 and the first diploma course was started in 1958-59, which was converted to Bachelor's degree in library information science in 1965. Since 2002, the department has introduced two years integrated master's degree in library & information science. Apart from these, the department is also running MPhil and PhD courses. The Department has the credit of producing more than 2000 library & information science professionals and 57 doctorates. The department is recognised as one of the finest department in maintaining the quality of LIS education imparted in the country.

The department is always trying to give best to the students so that they will be in a position to handle library as well as technology in a smooth and effective way. Years together the department was disseminating knowledge to the students by adopting the traditional methods of teaching such as lectures, discussion method, seminars, assignments, tutorials etc., but since the adoption of the technology in almost every field, the department felt that they can experiment with the use of

technology in imparting teaching of LIS, also it will be helpful to the students in getting acquainted with the new technology. Hence the Department of LIS came out with an idea to go for e-learning on an experimental basis by adopting suitable software and after having the results further decision regarding adoption of the e-learning may be decided. After going through a number of options decisions was made to use Moodle.

7. MOODLE AND VIRTUAL LEARNING ENVIRONMENT

Moodle is a free source e-learning software platform, also known as learning management system it was originally developed by Martin Dougiamad to help educators to create online courses with a focus on interaction and collaborative construction of content and in continual evolution and is available under GNU License. It is a software package for producing internet-based courses and websites. It is a global development project designed to support a social constructionist framework of education[6]. The features that are supported by Moodle are:

- Assignment submission
- Discussion forum
- Blog
- File download
- Grading
- Instant messages
- Online calendar
- Online news and announcement
- Wiki, etc.

Moodle was installed on a P-IV with Windows 7 operating system. After successful installation of the software the system was treated as a server were as all the systems of the computer laboratory was given access through the server. Once the software was fully installed and tested for its various facilities, the following e-learning activities were carried out using the software.

7.1 Development of Course

Moodle provides a number of options for general format of the course. Once can choose to order the course chronologically by week, conceptually by topic or socially with a big forum as the central organising principle. The course format one can choose are: LAMS (Learning Activity Management System), SCORN (Sharable Content Object Reference Model) Format, Social format, Topic format, weekly format. The MLISc course at University of Pune is having information technology as one of the compulsory paper. Hence, it was decided that the course on information technology would be developed on experimental basis and if found positive response from the students then further it would extended for other papers also. The topic format of the Moodle allows to create section for each topic, one can add content, forums, quizzes and other activities to each topic section. Accordingly, the course was developed (Fig. 1) and necessary rights and permission were set for the students and the teachers.

7.2 Enrollment of Students

The administrator was given full rights of the software. He was entrusted with a role of enrollment of the students of 3rd semester. Another reason of enrolling students from 3rd semester (Fig. 2) was, that the students of 3rd semester were well versed with the technology when they

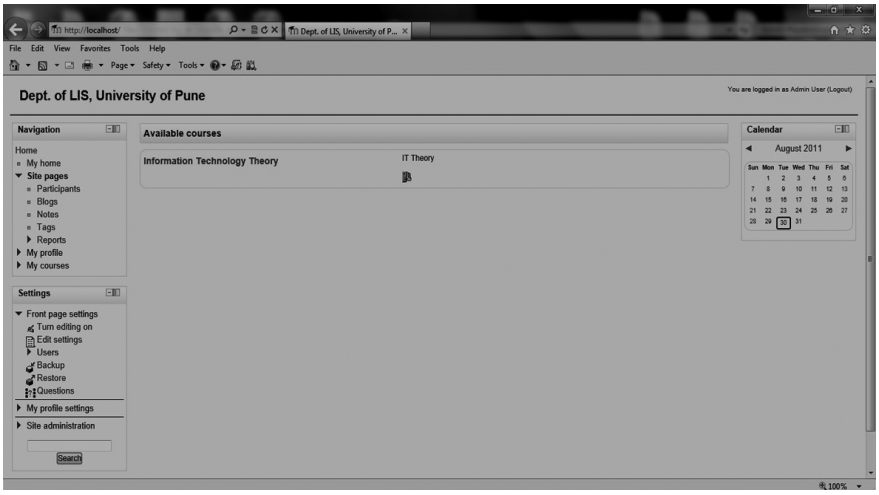

Figure 1. Information technologies course for students.

comes to third semester. Once the enrollment of the students was completed, they were given orientation of the software and was made fully aware about the working of the software and their rights as far as Moodle is concerned. They were provided with unique login ID and password to keep close watch on the activities carried out by the individual student.

7.3 Weekly Online Assignments

The students were provided with the weekly online assignments (Fig. 3) also they were instructed to submit their assignment online only. The students were supposed to login into moodle by using their ID and password, accordingly it was assessed by the teacher.

7.4 Blogs

Blogs have been around for years, but recently they have gained popularity. Some of the experts have referred blogs as a web-based journals.[22] They are supposed to be one of the most powerful tool to enable collaborative learning process. Today many of the institution has developed blogs and has kept open for the students to have discussion on a particular topic. Moodle supports for the creation of blog, hence it was decided to utilise these facility as a question and answer board (Fig. 4). The students were allowed to open discussion on the topics of their interest from the LIS. It has provided an opportunity for the students to discuss topics outside the classrooms.

7.5 Wikis

A Wiki is a web technology that allows a users to allows anyone to edit, it Promotes collaboration and knowledge sharing, fosters feeling of ownership and increases participation. Educators has recently explored its usefulness in promoting deeper learning and its integration of learning experiences in inside and outside

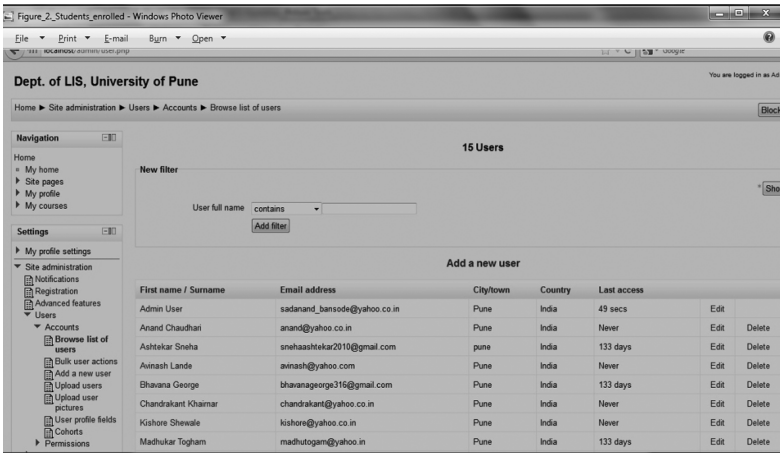

Figure 2. Students enrolled.

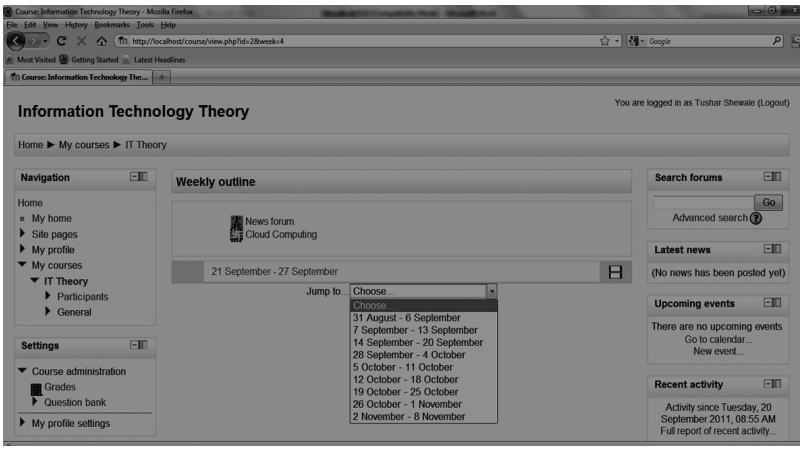

Figure 3. Weekly assignments of students.

the classroom. They too have realised that Wikis facilitate collaborative finding, shaping, and sharing of knowledge, as well as communication, all of which are essential properties in an educational context. Students were encouraged to contribute articles on some of the burning topics of LIS by using the wikis facility provided by the Moodle (Fig. 5). They were provided with the permission so as view, edit and to make a comment so as to improve the quality of the article.

7.6 Notifications to Students

Monthly seminar is the routine activity of the department. The 3rd semester students were notified regarding their seminars using Moodle. The notification were made available to the students (Fig. 6) well in advance with the topics on which they were supposed to make the presentation (Fig. 7). The whole full months activities were notified to the students by using the calendar.

7.7 Development of Question Bank

The students are always in need of the old question papers so as to have an idea of what type of questions generally appears in the examination. In order to fulfill this requirement and to give idea to the students what type of questions generally appears in the NET/SET the question bank was developed. The question bank generally have all types of question ranging from long essay type question to short and objective types of questions. (Fig. 8)

7.8 Generation of Reports

The Department has taken steps to provide education in the department by using technology. It was important to keep check on the activities of the students. Hence, it was decided to keep report of each student and accordingly fortnightly report was generated which used to highlight what different activities he has performed in this learning environment.

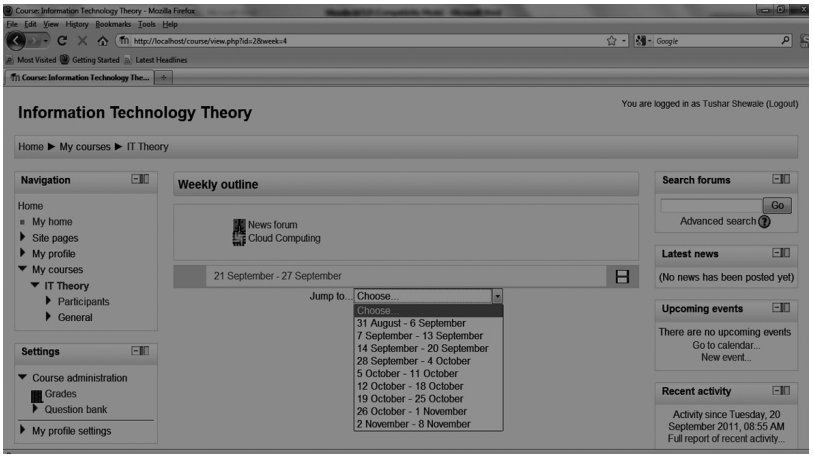

Figure 4. Blogs.

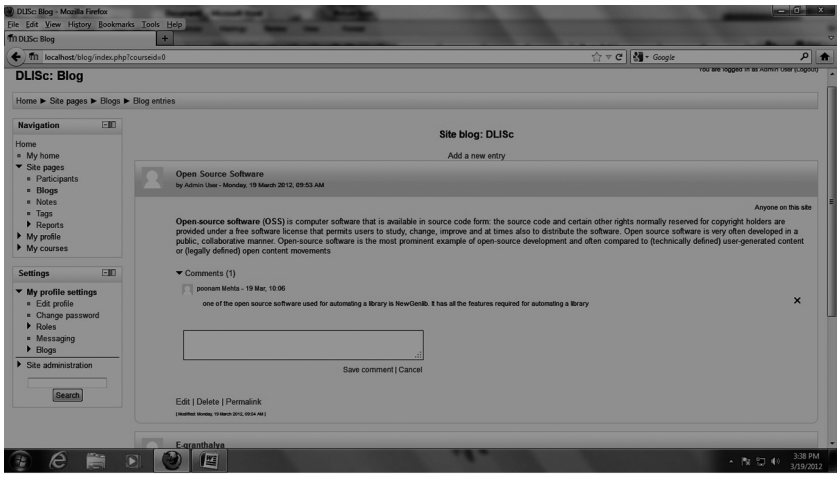

Figure 5. Wiki page for editing by students.

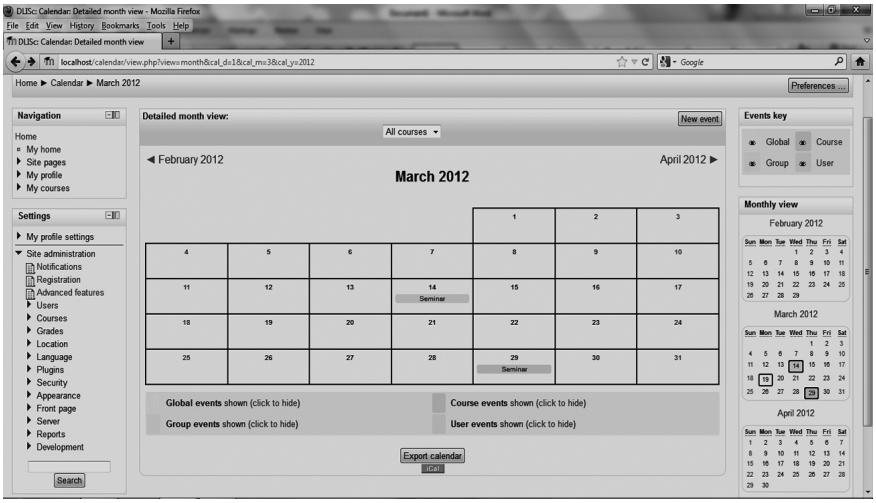

Figure 6. Notification of proposed activities through calendar.

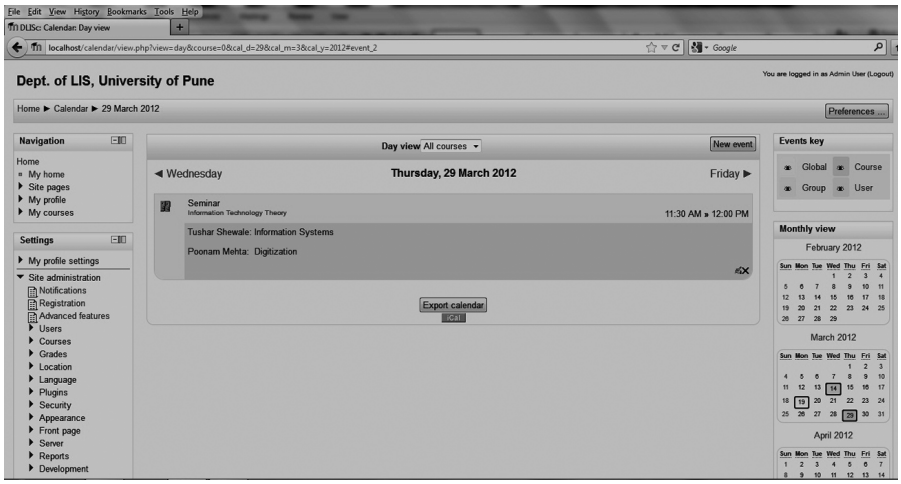

Figure 7. Notification of proposed activities through calendar.

The report not only highlights the areas he has viewed, but also highlights about his active participation and tasks completed. (Fig. 9).

8. DISCUSSIONS

Moodle has many advantages and can be modified according to the requirements of the course. At the initial stage of learning, it was little difficult for the students to shift the platform, i.e., from traditional classroom teaching towards the virtual environment. Even two students commented that it was frustrating to them, but feedback of majority of the students seems to be positive as they could gain experience of the technology. The positive impact can be clearly seen through their active participation in the discussion made through the blog. Discussion on the blogs has helped the students to build up their confidence in putting forth their views on a topic. Wiki facility has really enhanced the collaborative learning of the students. It has promoted critical thinking and knowledge construction and the students were able the go beyond the traditional boundaries of learning. They were having wider access to the information. It has helped the students the evaluate a piece of information and share their classnotes.

Wikis have made their way into the classrooms as tools for students to perform group authoring and collaborative analysis, develop literature review for research projects, summarise readings, communicate with students and create knowledge bases. Students were able to upload their assignments, comments on the blogs and contribution the wiki as per their own leisure time.

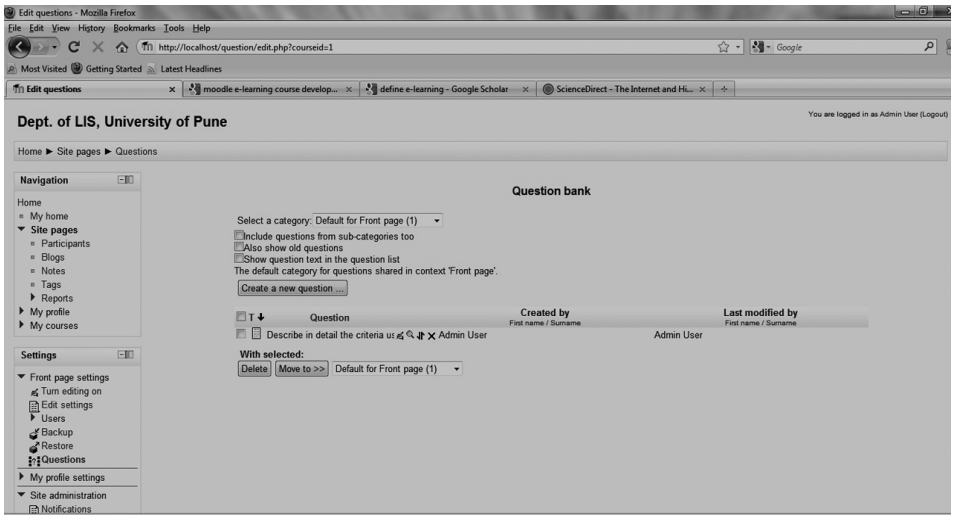

Figure 8. Question bank.

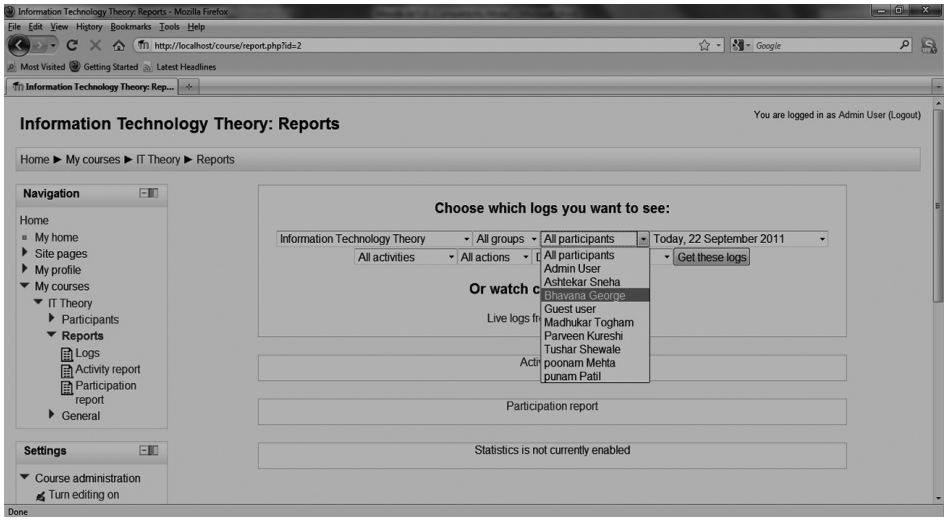

Figure 9. Generation of activity report.

Even one of the student has commented that, "Moodle has given them a new vision for collaborative writing". Nine students opined that the question bank developed in the Moodle has helped them for preparation of examinations such as National Eligibility Test (NET) and State Eligibility Test (SET) which is supposed to be the most essential criteria for joining the profession.

9. CONCLUSIONS

E-learning as a teaching-learning mechanism offers tremendous opportunities for learning beyond boundaries. Using e-learning an active teacher can reach to thousands of learners. Similarly, the individual learner gets opportunity to react to the content delivered to him, seek further advice, and communicate his thoughts back to the teacher. The teacher in turn can know to what extent his objective sure has been achieved and what more is to be done to improve students learning. The e-learning modules imparted through the Moodle will also help enable students, teachers and other agencies interested in education to develop learning material collaboratively. Content created through medias like wikis enhances quality of the content. Such Moodle-based e-learning programmes enable teachers to use, multiple teaching tools like question bank, assignments, feedback, etc. This certainly enriches students learning experience.

This module, could be adapted for other papers of the MLISc course. With little or no modifications, this module could be adapted to provide e-learning experience to students of other subjects also.

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